3.5” SATA Mirror Drive
（3Gbps-Speed Model）
SVRB-U Series
User's Manual

P/N A203955

Revision 1.1

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Introduction

Thank you for selecting the **3.5" 3Gbps-Speed SATA Mirror Drive Model** (hereinafter referred as **SATA Mirror Drive**). This manual describes the proper installation procedures, operation and maintenance of your **SATA Mirror Drive**, and will help you familiarize with its features.

NOTICE

Please be sure to read first the user's manual before using your **SATA Mirror Drive**.
This manual provides information on the appropriate handling procedures and configurations for all product functions. This information will allow the user to take full advantage of the **3.5" 3Gbps-Speed SATA Mirror Drive Model**.

In the unlikely event that you experience problems, this manual provides helpful information and instructions.

RETAINING PACKAGING

The original packaging materials protect the **SATA Mirror Drive** from damage during shipment.
After unpacking the **SATA Mirror Drive**, please retain the packaging materials in case you need to ship the **SATA Mirror Drive** in the future.
This product is sealed in an antistatic and moisture-proof bag before shipping. Open the bag only when you are about to begin setting it up.

RECORDING THE PRODUCT NAME, VERSION, AND SERIAL NUMBERS

Before installing the **SATA Mirror Drive** on the host computer, please jot down the model name, version, and serial numbers in the spaces provided for at the last page of this user's manual. Kindly keep these for your record purposes.
Section " 2.1 Part Names " shows the label location of model name, version, and serial number.

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Safe Product Use Notice

This user's manual uses the following symbols to highlight the important points related to the safe use of this product. Please observe all safety information as indicated.

SAFETY SYMBOLS

To protect against personal injury and product damage, the following symbols are used throughout this manual to highlight safety information.

	Warning	Indicates a potentially hazardous situation that may result in death or serious injury to the user or severe damage to the product.
	Caution	Indicates a potentially hazardous situation that may result in serious injury to the user or damage to the product.
	Important	Indicates important information wherein failure to observe may result to improper product function.

WARNING / CAUTION LABELS

Labels with black lettering against a yellow background affixed either to the exterior or interior of the product are **Warning** or **Caution** labels that provide important safety information. Observe all the directions given on these labels.

In cases where **Warning** or **Caution** labels can be found aside from those written in the manual, be sure to follow the directions as mentioned.

⚠ Warning

- If you detect any abnormal conditions, such as smoke or foul odors, shut off immediately the power of the host computer.
- If any foreign substance or material (metals, water, liquids, etc.) seeps into the **SATA Mirror Drive**, shut off immediately the power of the host computer.
- Do not use the **SATA Mirror Drive** in hot or damp locations. Using this product in such locations may result in fire, electrical shock, or damage.
- Do not disassemble or modify this product. STR-V cannot guarantee the performance or safety of any product that has been repaired by the customer or by an unauthorized third party. Repairing by your self may result in fire, electrical shock, or damage of the product.
- Before connecting or disconnecting the interface connector, turn off first the power of the host computer and any other connected devices. To avoid placing excessive stress on the printed circuit board of the **SATA Mirror Drive**, push or pull the connector only along the axis perpendicular to the board. Avoid bending the connectors. Also avoid using undue force to connect or disconnect the connectors or cables, which may result in fire, electrical shock, or damage.

⚠ Caution

- Do not use the **SATA Mirror Drive** in locations subject to vibration or shock exceeding the specified values. Usage in such locations may result in malfunctions or disk failure.

- Do not use the **SATA Mirror Drive** in locations or conditions susceptible to condensation. Rapid temperature change may cause condensation to form in the **SATA Mirror Drive**. If you think condensation has occurred, allow the **SATA Mirror Drive** to acclimate to the new environment. When there is a rapid temperature change, avoid using the **SATA Mirror Drive** until it reaches the new ambient temperature.

- Do not place the **SATA Mirror Drive** near electronic components with strong electromagnetic fields, such as televisions or loudspeakers.
  Usage of the **SATA Mirror Drive** in such locations may result in malfunctions or disk failure.

- Turn off the power before moving the unit enclosing the **SATA Mirror Drive**. This will prevent damage to the HDD and other internal components of the **SATA Mirror Drive**.

- Do not turn on the power immediately after turning it off, or turn off the power immediately after turning it on. Leave at least 20 seconds in-between successive operations involving power on or off. This will help prevent damage or malfunction to the mounted HDD. The HDD motor spindle requires about 20 seconds to stop rotating and come to a full rest. In addition, when removing the correctly functioning drive unit for replacement, turn off the power and wait for at least 20 seconds.

- Do not remove a fully functional drive unit while the power is still on. The **SATA Mirror Drive** controller unit will consider the drive unit as failed if it is removed. Removing a fully functional drive unit may also damage the disk heads and platter inside the HDD.

- Store the **SATA Mirror Drive** in the antistatic bag. Leaving this product unpacked and unused for a long period of time may lead to malfunction or disk failure.

- Avoid applying excessive pressure to the covers of the drive unit, which may lead to malfunction or disk failure.

- After unpacking from transport, ensure first that each disk drive is properly inserted before turning on the power.

Important

- Back up all important data stored in the **SATA Mirror Drive** to a suitable storage medium, such as tape drive or MO drive. This product's mirroring technology prevents data loss even if one drive unit fails. However, if two drive units fail at the same time or if a non-redundant part fails, data loss may still occur. Additionally, accidental deletion of data or equipment damage may also result in data loss.

- Do not block the ventilation openings of the HDD. Lack of cooling airflow may lead to hard disk drive failure.

- Wait at least 10 seconds after the access indicator has stopped flashing before initiating the shutdown procedure for your host computer. The **SATA Mirror Drive** uses cache memory to store the data frequently accessed from the HDD. Except in emergencies, you must follow the operating system's shutdown procedures. Failure to so may result in loss of data stored in cache memory.

- Never remove or exchange the drive units, except to replace failed controller units or drive units, since the **SATA Mirror Drive** controls the drive units by using its serial numbers. Thus, removal or replacement may result in failure to boot up the host computer.

- When installing it in the host computer's bay, mount the **SATA Mirror Drive** securely using the mounting screws provided (0.49 Nm is recommended).

- In the event of a drive unit failure, it may take up to 15 seconds to start up the **SATA Mirror Drive**. The host computer may even fail to recognize it due to BIOS timeout settings.

Handling Static-Sensitive Device

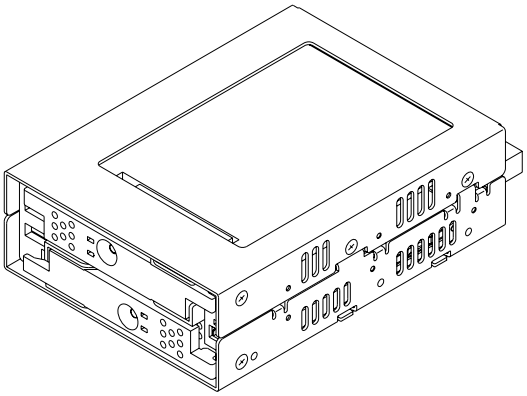
To prevent damage to components due to static electricity, observe the following precautions when handling this product.

- Before handling the **SATA Mirror Drive** or other static-sensitive devices, touch a metal object, such as the metal enclosure of the host computer, to discharge any static electricity from your body.
- Always handle components carefully. Never touch exposed circuitry.
- When replacing controller units or drive units, or when moving the **SATA Mirror Drive**, place the antistatic bag used in wrapping the product during shipment on a flat, level surface. Use this as your **SATA Mirror Drive** working area.

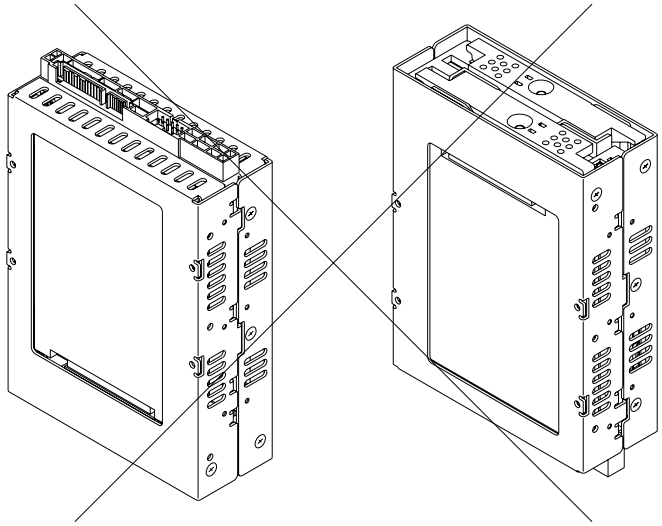
SATA Mirror Drive Installation Important Points

When installing the **SATA Mirror Drive** in the host computer, ensure that the drive unit is installed horizontally, as in <A> below.
Do not install the unit vertically, i.e. with the connector facing either up or down, as in <B>.
Furthermore, when installing the unit on its side as in <C>, consult first with your distributor.

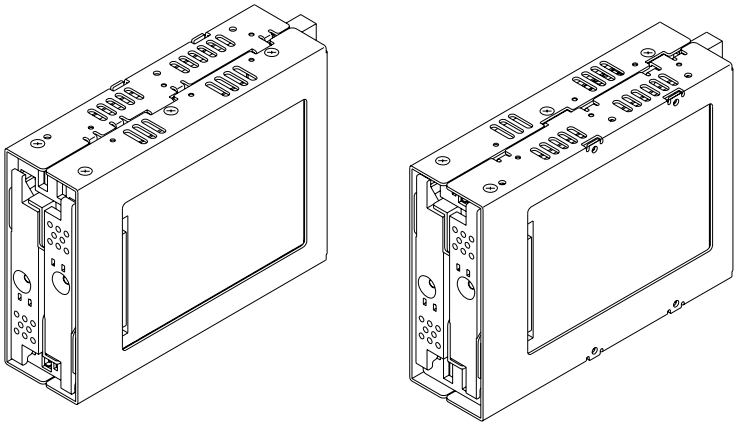
<A> Drive unit in horizontal position



<B> Drive unit in vertical position



<C> Drive unit on its side



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1. 3.5" Form Factor SATA Mirror Drive Functions

Incorporating two SATA 2.5-inch Hard Disk Drives, Storage Vision's **3.5" Form Factor SATA Mirror Drive** uses mirroring technology to safeguard data and to provide uninterrupted operations.

Since the host computer will recognize the **SATA Mirror Drive** as a standard SATA HDD, installing the **SATA Mirror Drive** simply involves connecting it to a SATA cable from the host computer.

1.1 Features

- Supports Mirroring technology (RAID Level 1) implemented via hardware thereby reducing system overhead.

- In the event that one of the drive unit fails, the **SATA Mirror Drive** will continue to function, maintaining data integrity.
  - When the failed disk is replaced with a new replacement disk, data rebuilding will begin automatically.
  - Hot plug function is supported at drive interface thereby improving system reliability.

- Based on the industry standard Serial ATA interface, the **SATA Mirror Drive** can be used like any other standard Serial AT HDD.
  - No special device drivers needed.
  - Compatible with most operating systems

- Compact size
  - 101.6 mm x 145.0 mm x 40.0 mm (W x L x H)

- Serial ATA Interface conforming to ATA/ATAPI-7 Specifications
  - Maximum SATA transfer speed of up to 3Gbps transfer speed is supported at host interface
  - Uses two 2.5-inch SATA drives that support the maximum data transfer speed of 3Gbps

- Dip-switch-selectable operation mode and function

- Self-Diagnostics capability - Power On Self Test (POST) is performed every time the Mirror Drive is turned on.

- Automatic data reconstruction every time a failed drive is replaced.
  - Accepts and processes host commands even during data reconstruction.

- Cache function feature for improved system performance.

- Visual and Audible Status Indicators
  - Internal buzzer for audible alarms.
  - LED Indicators are provided for direct and visible status checking of each drive and the Mirror Drive.
  - External Status Bit connector is available for special customer-specific indicators.
  - Special program/utility is also available for monitoring/status indication in a Windows environment.

1.2 Mirroring

Mirroring technology involves writing of data to two drive units simultaneously. If one drive unit fails, data is written to and read from the other drive unit.

1.3 Cache Buffer Function

The **SATA Mirror Drive** is equipped with a large cache memory capacity. With write cache mode enabled, the **SATA Mirror Drive** will signal completion of command processing to the host computer when data is written to cache memory. The performance will be improved by writing accumulated data to the HDD when the host computer is not accessing the **SATA Mirror Drive**. Write cache mode is enabled thru a DIP Switch. The default setting at shipment is "enabled".

	Important	Always observe the shutdown procedure specified for the host computer's operating system. In delicate situations, try to wait at least 10 seconds to be sure that both the access indicator and the drive status indicator have stopped flashing before shutting off the power. Turning off the power while the access indicator or the drive status indicator is still on may result in loss of data currently located in cache memory.

1.4 Data Rebuilding

If a failed drive unit is correctly replaced, data rebuilding (the copying of all data from the fully functional drive unit to the new replacement drive unit) will start automatically.

During data rebuilding, the drive status indicator of the fully functional drive unit will light green. The drive status indicator of the replacement drive unit will blink orange every one second.

	Caution	Do not turn off the host computer while the **SATA Mirror Drive** is still rebuilding the data to prevent loss of data or failure.

When a sector of the fully functional drive unit can not be read during data reconstruction, the **SATA Mirror Drive** skips copying the bad sector and continues to reconstruct the remaining data. These skipped sectors will no longer be readable. Once some data is written to this sector, it can be read correctly again.

	Important	If the data recovery process skips some sectors during data rebuilding, then the data on these sectors will be lost. Periodic backup is recommended.

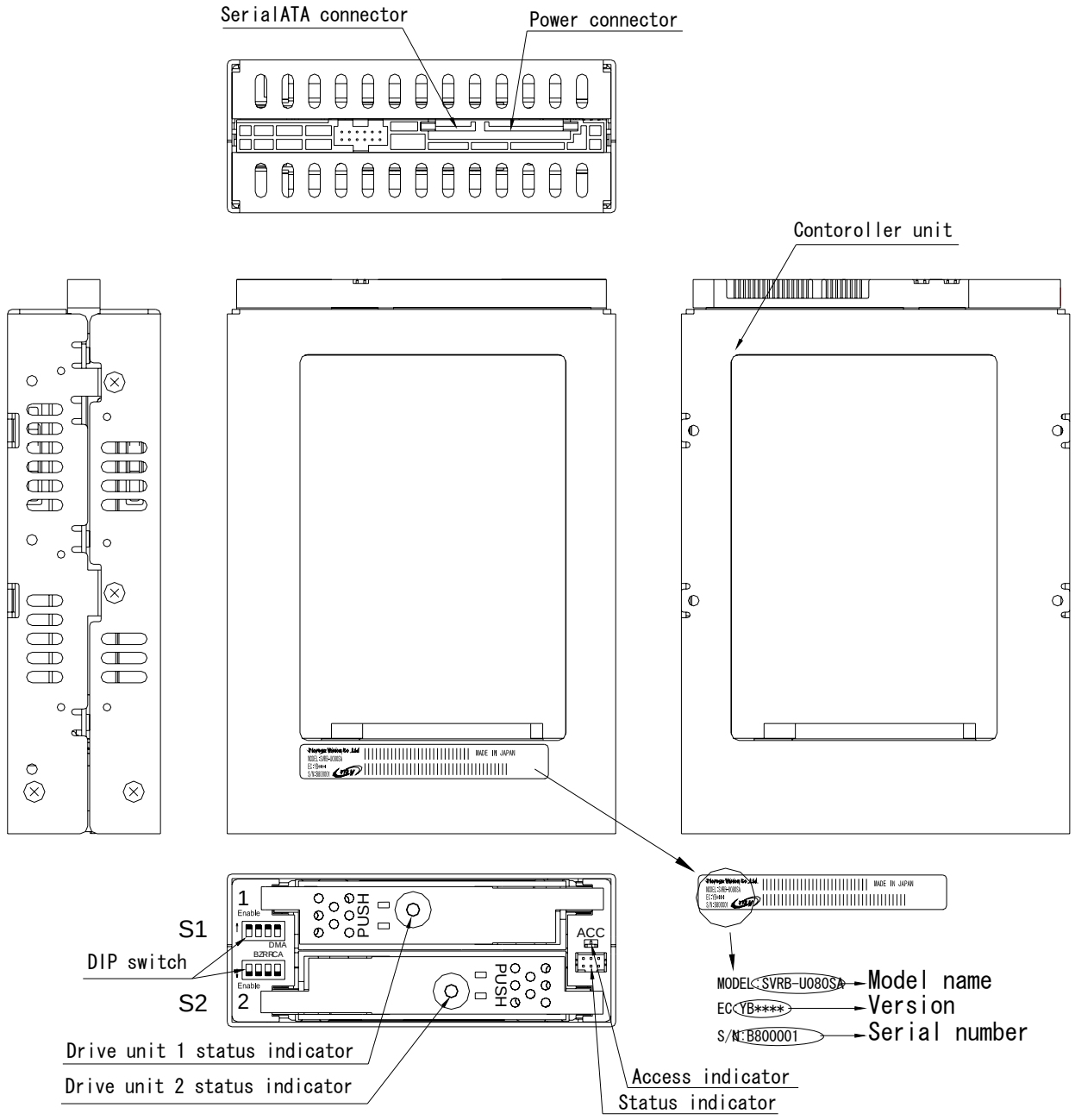
1.5 Revival Reconstruction

When an error occurs in a drive unit and the mirror controller cannot get the response from the drive for 30 seconds, the controller will issue the reset command to the drive and check its status again.
If the drive recovers, the **SATA Mirror Drive** returns to the normal operation. But if not, the controller treats the drive as a failed drive.
The function "Revival Reconstruction" turns the power of the drive OFF/ON. And if the drive status becomes ready, reconstruction is started.
Revival reconstruction is executed up to two times. After the same error occurs three times, the **SATA Mirror Drive** will remain in Degraded Mode. Then the failed drive status indicator (LED) will light orange.
The function can be enabled /disabled by Dip Switch. Factory default is "enabled".

The **SATA Mirror Drive** still responds to the host normally even during reconstruction. After the reconstruction is finished, the **SATA Mirror Drive** returns to normal mode automatically.

2. Outline

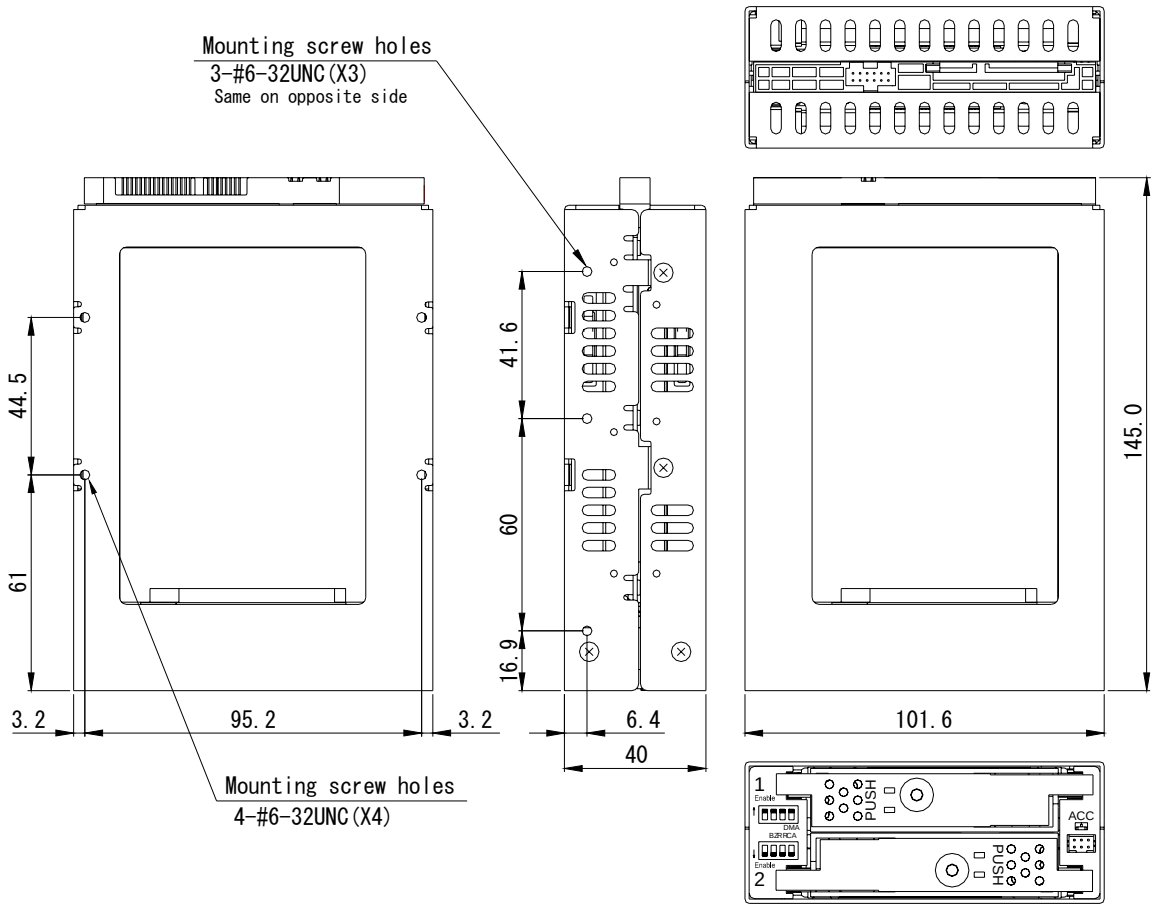
2.1 Part Names



2.2 Dimensions

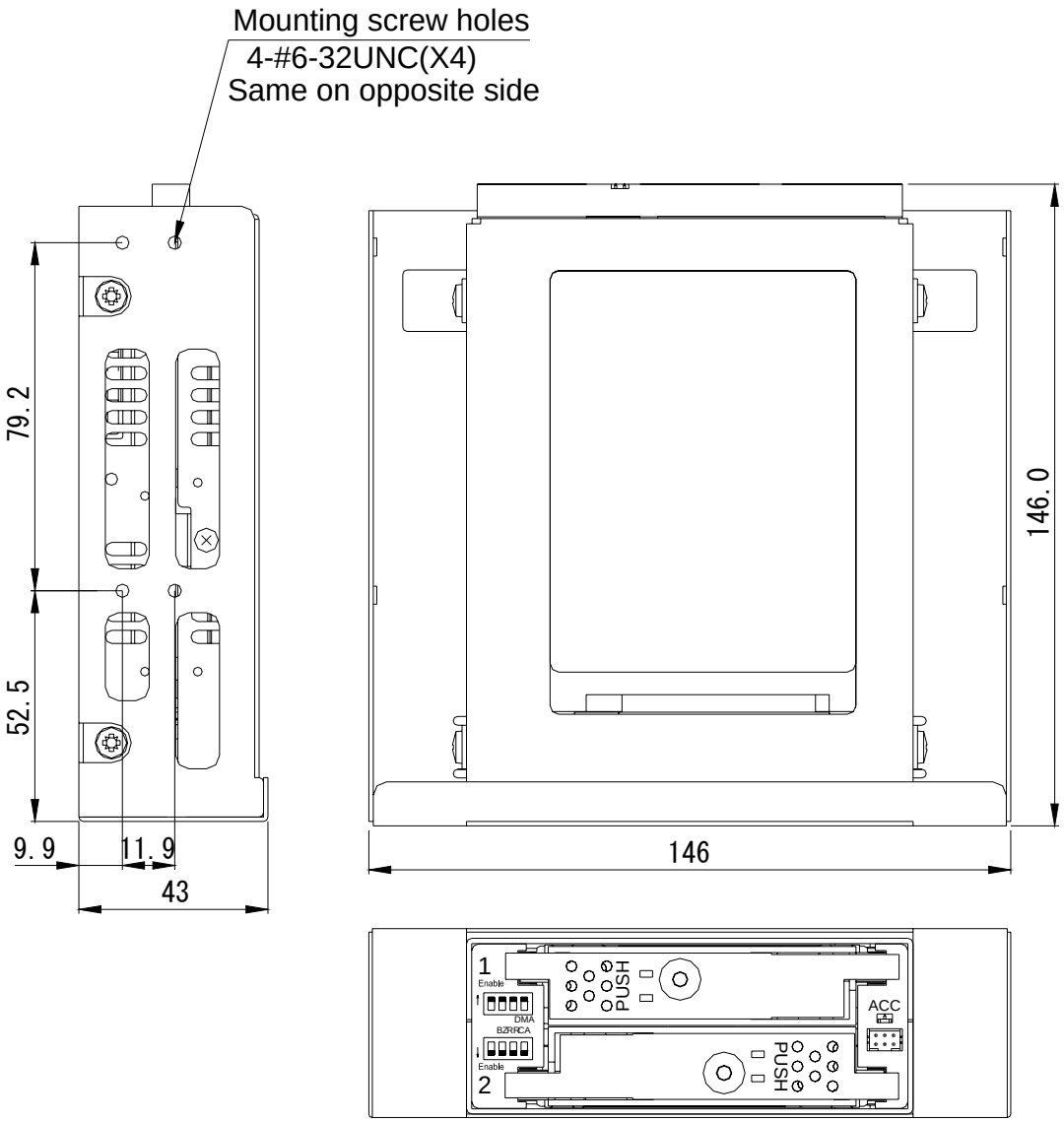
2.2.1 SATA Mirror Drive

Unit : mm



2.2.2 5-inch Bay Mirror Drive Installation Attachment

Unit : mm



3. Installation

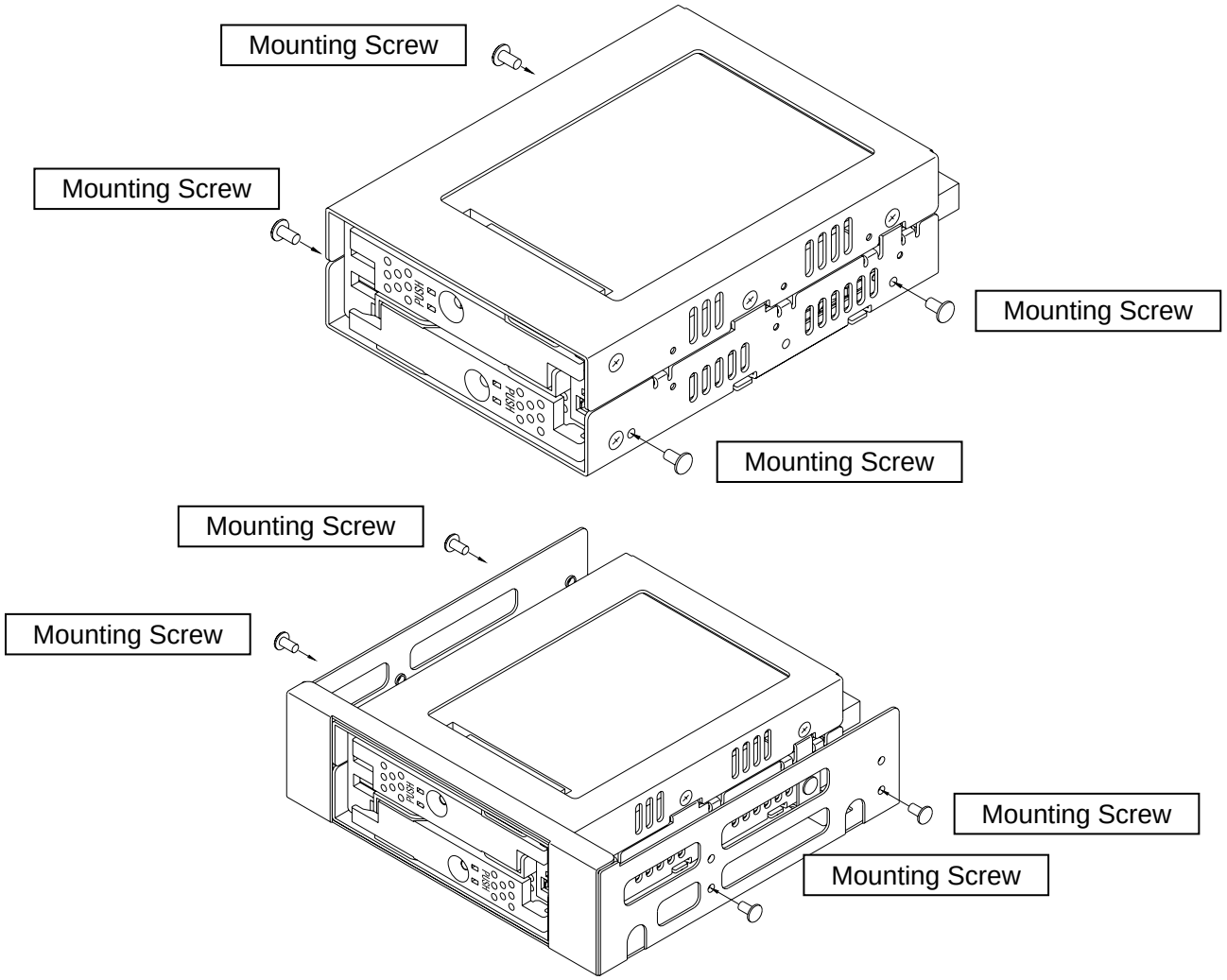
3.1 DIP Switch Settings

Before mounting the **SATA Mirror Drive** in your host computer, double-check the DIP Switch settings. Refer to "4. Settings" for the configurations of the DIP switch. For default settings, refer to " Appendix-C Factory Default Settings."

⚠	Caution	When setting the switches and attaching the cables, ensure first that the power supply of the host computer is turned off.

3.2 Mounting in the Host Computer

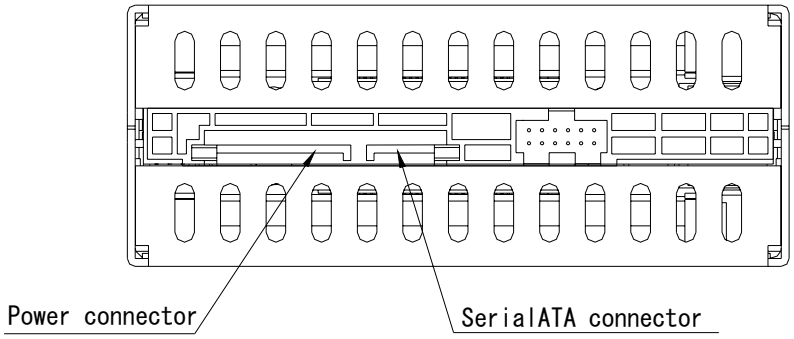
When mounting in the host computer, use the attached mounting screws and the specified mounting holes. The mounting screw hole locations are shown in " 2.2 Dimensions."
An example of a mounting screw hole location is shown below.



⚠	Caution	When installing into the host computer, provide sufficient cooling in order to ensure that the surface temperature of the drive unit remains below 50°C.

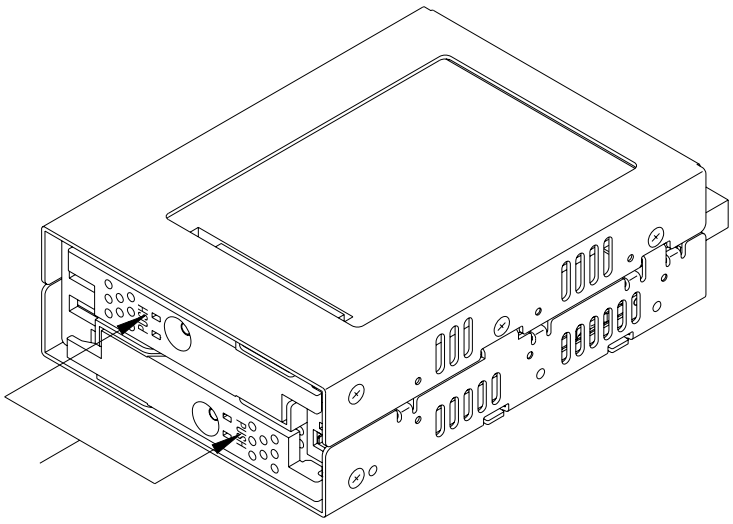
3.3 Cable Connection

<1> Connect SATA power cable that supplies DC +5V.
<2> Use a standard SATA signal cable to connect to the host computer.



3.4 Turning on The Main Power

Before turning on the host computer, gently press the front face of each drive unit to confirm that these are firmly inserted and verify if the lever lock is firmly fixed.
Next, turn on the host computer's main power supply and check if the host computer detects the unit correctly.



Push the drive units and verify if the units are firmly inserted.

⚠	Caution	Before turning on the host computer, make sure that both the Signal and power cables are attached properly.

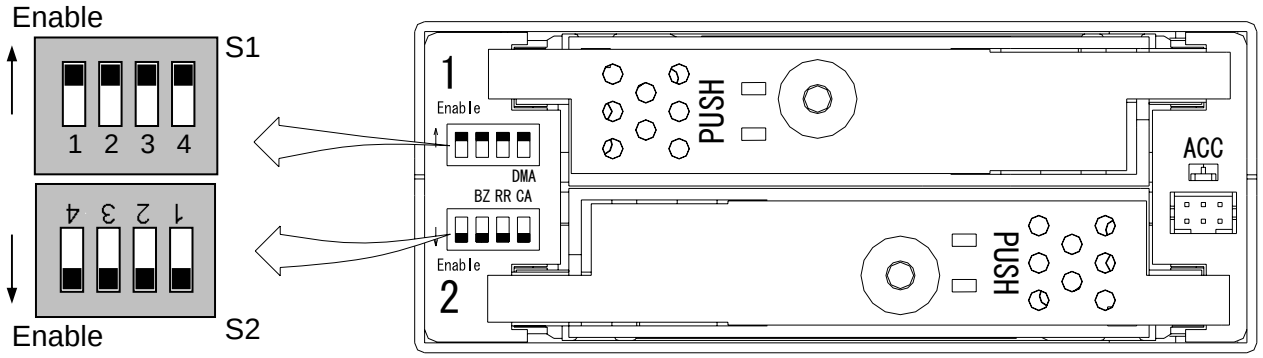
4. Settings

4.1 DIP Switch

The DIP Switch can be used to change the settings of Write Cache mode, DMA setting Revival Reconstruction Feature and Buzzer Enable/Disable Features of the **SATA Mirror Drive**.

It is located on the upper right side of the sub-card (at the back of CN13).

Since the **SATA Mirror Drive** is a high-speed and reliable storage unit, its default DIP Switch settings are set to maximize its performance.



DIP Switch	Functions	Default Switch position
S1-1	Mode Bit 1,2,3	Enable (Normal)
S1-2		
S1-3		
S1-4	Reserved 1	Enable
S2-1	Write Cache	Enable (Write Back)
S2-2	Revival Reconstruction	Enable
S2-3	Buzzer	Enable
S2-4	Reserved 2	Enable

⚠	Caution	Except for S2-2 & S2-3, turn off the power of the host computer when changing the setting of the switches. (The above diagram shows the default factory settings before shipping.)
		Do not change the Mode Bit switches (S1-1, 2, 3) and S2-4. Otherwise, performance and function variations may occur in the unit.

4.1.1 Operating Mode (Do not change)

The operating mode switches (S1-1、S1-2、S1-3、S1-4 & S2-4) are set to normal mode (mirror mode). Do not change this setting.

	Important	Changing the operation mode switches will result in loss of data.

4.1.2 Write Cache Mode

This bit sets the write cache mode. If set to "ENABLE" (Default Setting meaning Write Cache Enabled), the **SATA Mirror Drive** will signal completion of command processing to the host computer when the data has been written to cache memory. If set to "ON", the **SATA Mirror Drive** will signal completion of command processing to the host computer when data is actually written to the drive unit.

	Important	Always observe the shutdown procedure specified for the host computer's operating system. In delicate situations, try to wait at least 10 seconds to be sure that both the access indicator and the drive status indicator have stopped flashing before shutting off the power. Turning off the power while the access indicator or the drive status indicator remains lit may result in loss of data currently located in cache memory.

4.1.3 Revival Reconstruction

If the bit is set to "ENABLE" (Default Setting meaning Revival Reconstruction Enabled), the **SATA Mirror Drive** will attempt to do data reconstruction after Error Recovery Procedure fails while in Retry Mode. The **SATA Mirror Drive** will not remain in Degraded Mode but instead, will automatically do data reconstruction to trying to revive the drive up to two times.

4.1.4 Buzzer

If the bit is set to "ENABLE" (Default Setting meaning Buzzer Enabled), the buzzer will sound when any error is detected. In the event of a drive unit failure, the buzzer will continue to sound until the failed drive unit is replaced. The buzzer can be stopped if the switch position is changed to "ON".
Set back the buzzer to "OFF" after the failed drive unit has been replaced.
When an external bracket is used for the 5" Drive Bay installation, please make sure that S2-3 setting of the Dip Switch is set to "ENABLE". The buzzer sound can be turned ON and OFF through the Buzzer switch in the external bracket. If the buzzer is turned OFF prior to drive replacement, slide it back to ON after the new drive unit has been inserted.

5. Status Display

5.1 Indicator

LED indicators on the front display the status of both controller unit and drive units.

5.1.1 Access Indicator

ACCESS	Green	<1> When the power is turned on. *(*1)* <2> Processing a command from the host computer. Either of the above.
	Orange Flashing	<1> Both drive units have failed, both drive units are not correctly inserted. (Both drive status indicators are off.) <2> When one drive unit has failed and the fully functional drive unit has been erroneously replaced. (Both drive status indicators show green simultaneously.) <3> Both drive units have been replaced. (Both drive status indicators show green simultaneously.) Any of the above.

5.1.2 Drive Status Indicator

DRIVE1 DRIVE2	Green	<1> When the power is turned on. *(*1)* <2> Processing a command from the host computer. <3> Processing an internal command. Either of the above.
	Orange	<1> When the power is turned on. *(*1)* <2> Drive unit has failed. Either of the above.
	Orange Flashing	Target drive unit of data rebuilding. *(*2)* (Source drive unit LED is green at the same time.)

Note:

*(*1)* When turning the power on, the access indicator shows green, and both drive status indicators show orange then green. When **SATA Mirror Drive** startup process is complete, all will be turned off.

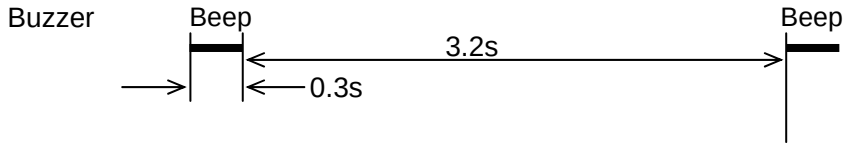
*(*2)* Drive Status Indicator will go out after data rebuilding.

	Important	If the drive status indicator flashes orange, immediately replace the said drive unit. Leaving the **SATA Mirror Drive** with a failed drive unit will result in data loss if the other drive unit fails.

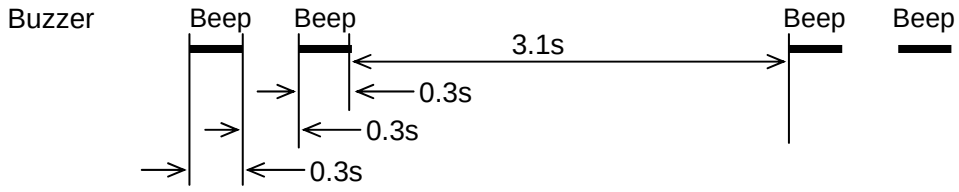
5.1.3 Buzzer

If this is set to "ENABLE," in the event of a failure, the buzzer will beep at the interval specified below.

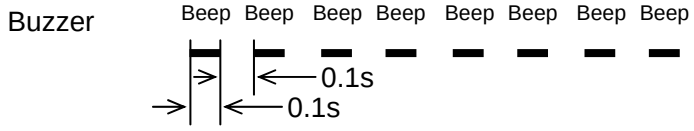
Drive unit 1 failed



Drive unit 2 failed

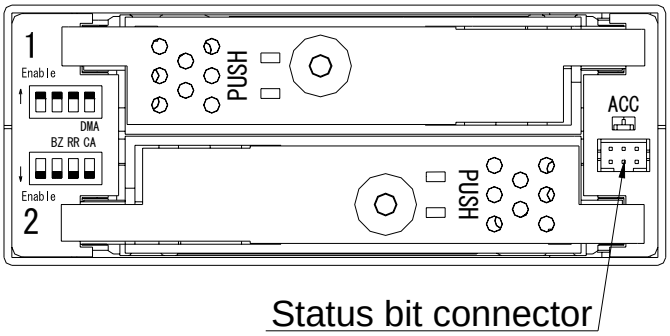


System stopped (Both drive units have failed)



5.2 External Output Signal

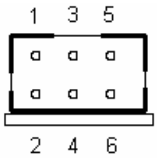
It is possible to monitor the **SATA Mirror Drive** status externally. The location of the connector is shown in the figure below.



5.2.1 Status Signal

External status output is transmitted as a 3-bit signal through the Status Bit connector.
This table shows the pin configurations, status definitions, internal circuitry, electrical specifications, and connector specifications for the status output signal.

● The connector signal pins are configured as follows:

	Signal	Connector Pin Assignment
1	GND	
2	$+5V_{DC}$	
3	Status Bit 2	
4	Status Bit 1	
5	Status Bit 0	
6	GND	

CN13

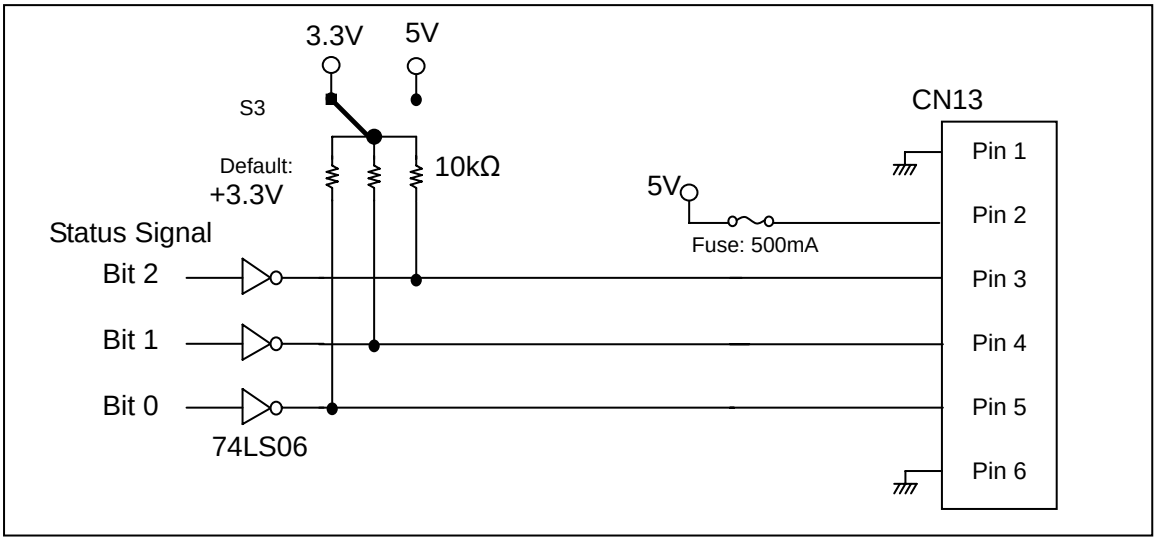
● Status output is transmitted in 3-bit signals, as follows:

	Bit 2	Bit 1	Bit 0	Status
0	L	L	L	Normal Operation
1	L	L	H	Drive Unit 1 Failed
2	L	H	L	Drive Unit 2 Failed
3	L	H	H	Data rebuilding
4	H	L	L	Controller unit failure *(*1)*
5	H	L	H	Reserved
6	H	H	L	**SATA Mirror Drive** startup processing
7	H	H	H	Reserved (Test Use Only)

H: TTL level output high.
L: TTL level output low.

Note:
*(*1)* The following condition will cause a Controller unit failure transmit status.
- If both drive units fail when the power is turned on.
- If both drive units are not properly connected when the power is turned on.
- If the correctly functioning drive unit is erroneously replaced when one of the drive units failed.

● The internal circuitry of status output signals are indicated as follows:



● Status Output Signal electrical specification

Voltage *(Selectable Through S3)*	Output High Voltage *(V_{DC} max)*	+3.3V *(Default)* / +5.0V *(Option)*
	Output Low Voltage *(V_{DC} max)*	+0.4V
Current	Output Sink (Low) Current *(max)*	20mA
	Output Source (High) Current *(max)*	0.25mA
+5V_{DC}	Pin 2 *(max continuous)*	200mA

● Connector specifications

	CN13
SATA Mirror Drive header	DF11-6DP-2DS (24)
External Connector Crimp Socket – *(recommended)*	DF11-6DS-2C
External Connector Crimping Contact – *(recommended)*	DF11-2428SC

Note: All components are from HIROSE Electric Co. Ltd.

6. Trouble shooting

6.1 Trouble indication

If the **SATA Mirror Drive** fails, either the access indicator LED or the drive status indicator LED will flash Orange.
If the buzzer switch is enabled, the buzzer will emit a continuous beeping sound.
These status/failure indications must be considered to determine if removal and replacement of a hard disk unit is necessary.

Access indicator	Drive status indicator		**SATA Mirror Drive** status and measures.
	Drive unit 1	Drive unit 2	
---	---	---	Normal operation.
---	Green	Orange flashing	Rebuilding data from drive unit 1 to drive unit 2. (Normal operation)
---	Orange flashing	Green	Rebuilding data from drive unit 2 to drive unit 1. (Normal operation)
---	Orange	---	Drive unit 1 failure. Replace the drive unit 1 with a new drive unit.
---	---	Orange	Drive unit 2 failure. Replace the drive unit 2 with a new drive unit.
Orange	---	---	Controller unit failure. Replace the controller unit with a new controller unit.
OFF	OFF	OFF	When the **SATA Mirror Drive** does not respond to the host, check the condition of the power supply. If problem persists, please contact your distributor.
Orange flashing	OFF	OFF	Check the condition of both drive units. If problem persists, please contact your distributor.
Orange flashing	Green	Green	Double-check to confirm that the desired drive unit was properly replaced. Temporarily return to the original setup and repeat the process.
Other LED indications not mentioned.			Contact your distributor.

--- : Normally off but will light up or flash when accessed.
If replacing the drive unit does not fix the problem, contact your distributor.

6.2 Replacing Drive Unit

A failed drive unit can be replaced while the **SATA Mirror Drive** is accessed.
When the failed drive unit is replaced with a new drive unit, data rebuilding will begin automatically. During data rebuilding, the host computer can still access the **SATA Mirror Drive**.
Note: Make sure that the drive status indicator (LED) lights orange before replacing a failed unit.

❗	Important	Before replacing the failed drive unit, be sure to prepare the replacement drive unit designated by STR-V as described in "Appendix-D Replacement Parts. " Do not replace with HDDs other than the designated model, even if the capacity, manufacturer, or model numbers on the label are the same. Using an unauthorized HDD may result in malfunction or damage. The warranty does not cover any damage encountered due to replacement with a non-specified HDD. Furthermore, STR-V is not held liable for any consequence resulting from the use of an undesignated HDD.

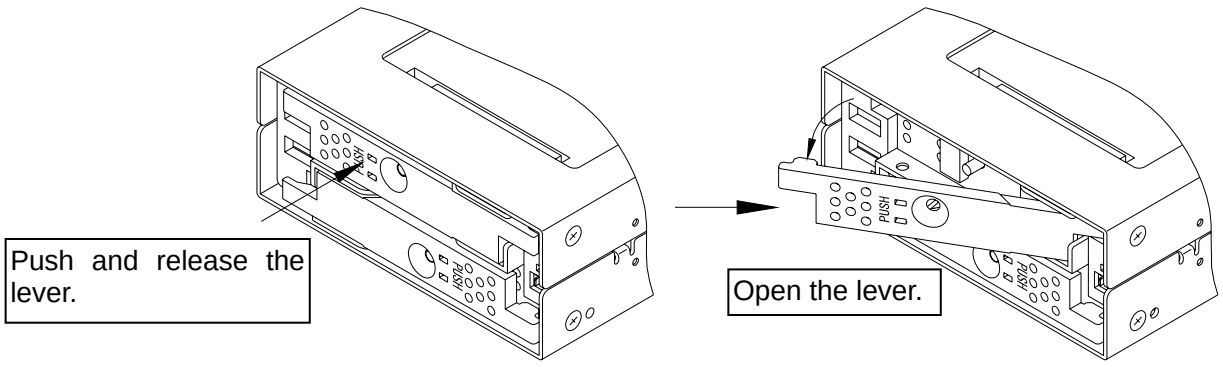
❗	Important	If the drive status indicator lights orange, immediately replace the specified drive unit with a new drive unit. Leaving the **SATA Mirror Drive** with a single operational drive unit for an extended period will result in data loss if the other drive unit fails.

⚠	Caution	Before handling the drive unit when replacing a failed drive, touch a metal object first, such as the metal enclosure of the host computer, to discharge static electricity from your body.

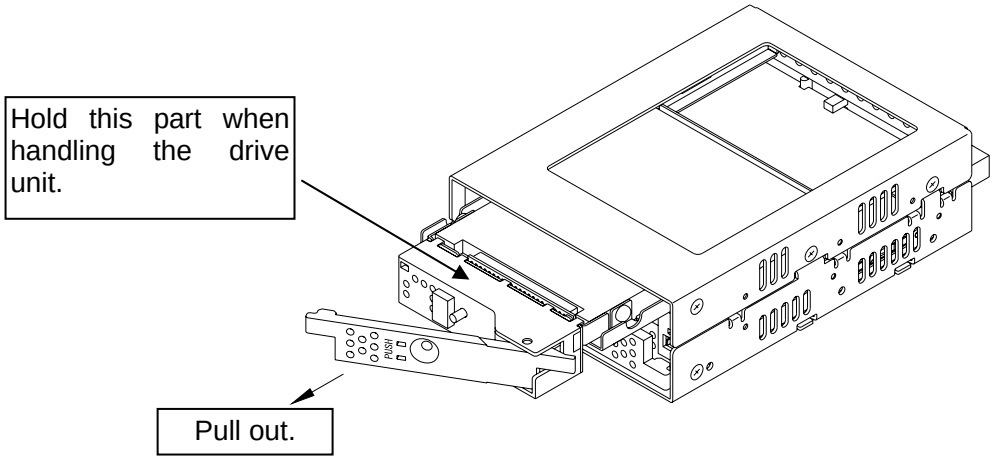
6.2.1 Replacement of 1 Drive Unit

● Drive Unit Replacement Procedure (When Host computer's power supply is not turned off).

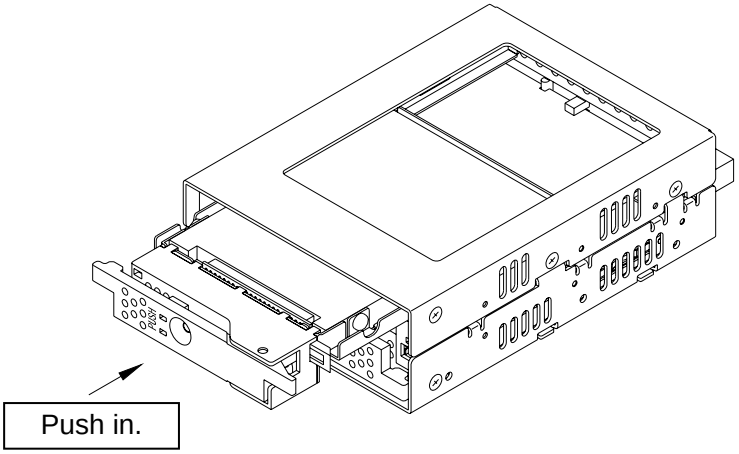
1. Prepare a new drive unit as specified in " Appendix-D Replacement Parts."
2. Confirm correct identification of the failed drive unit through the drive status indicator or buzzer.



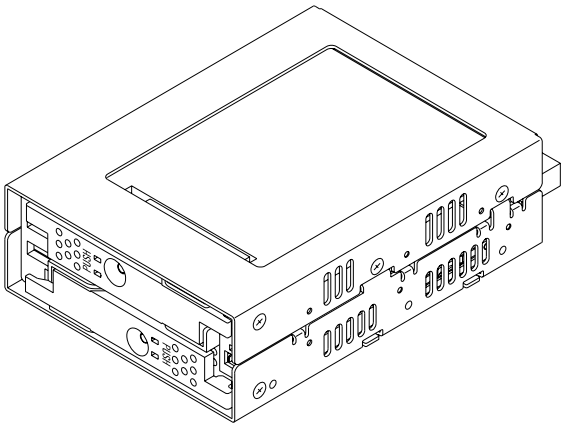
3. Pull the failed drive unit's lever, and then pull out the drive unit.



4. Close the front lever and insert the replacement unit. Push the replacement drive firmly into the unit with both hands.



5. Confirm that the front lever is closed.



6. Several seconds after replacing the drive unit, data reconstruction will start. The drive status indicator of the replaced drive unit will flash orange (@ 1 second interval).

	Important	Do not remove the drive unit while data reconstruction is underway.

7. During data reconstruction, the drive status indicator of the replacement drive will flash orange, and the drive status indicator of the fully functional drive unit will light green. The access indicator will not light.

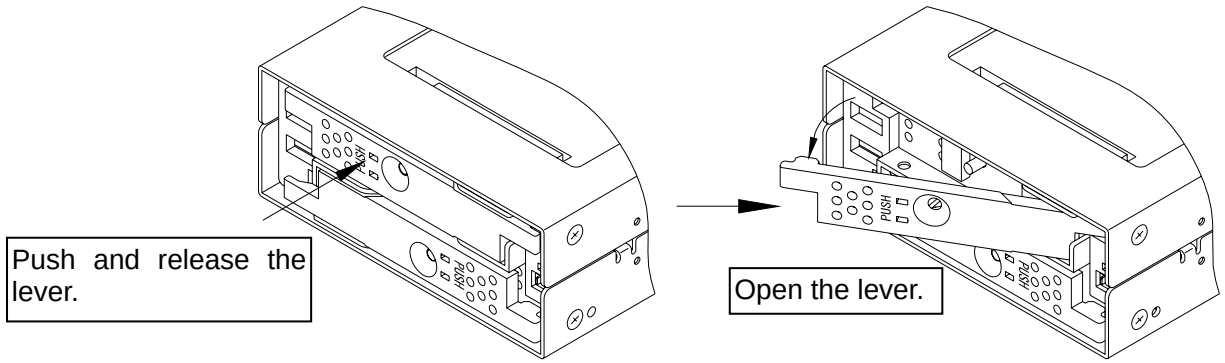
8. When data reconstruction is complete, the drive status indicator will go out.

9. If the drive status indicator of the replaced drive unit turns orange once again, repeat the procedure, starting with step 2.

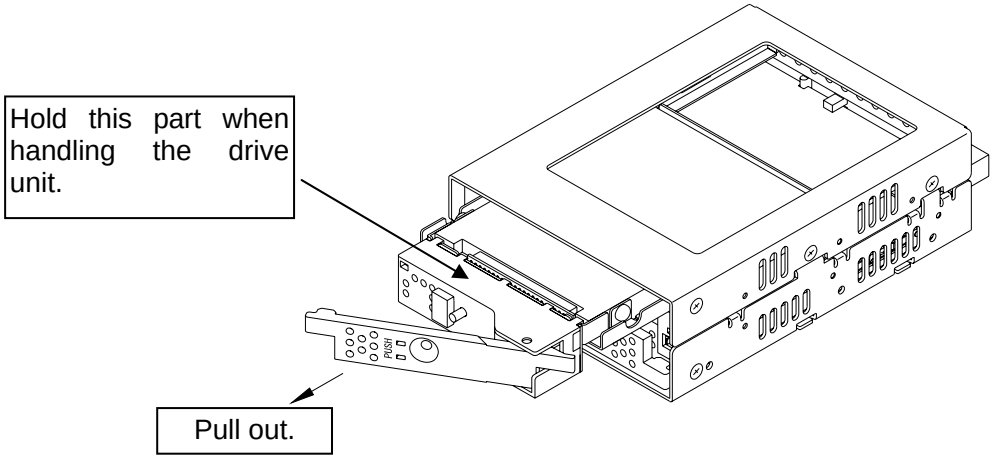
	Important	If you have mistakenly replaced the correctly functioning drive unit, the drive status indicator of both drive units will light green. Then the access indicator will flash orange. The host computer will be unable to operate the **SATA Mirror Drive**. In this case, turn off the host computer. Replace the failed drive unit with the new drive unit, and return the fully functional drive unit. Data reconstruction will immediately start after turning on the host computer.

●Drive unit replacement. (When Host computer's power supply is turned off)

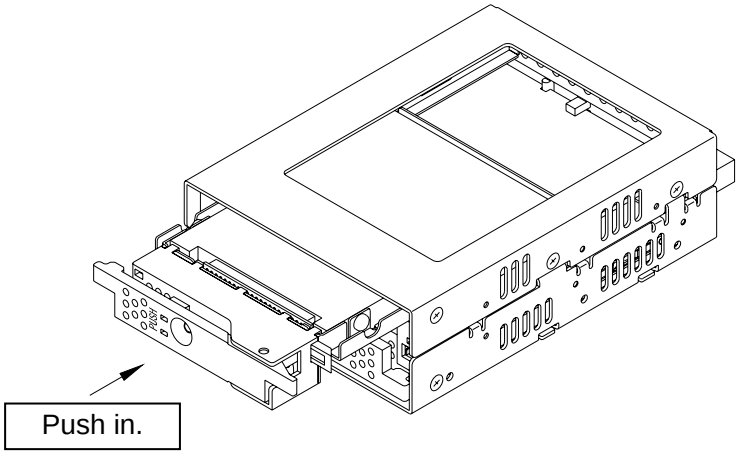
1. Prepare a new drive unit as specified in "Appendix D Replacement Parts."
2. Confirm correct identification of the failed drive unit through the drive status indicator or buzzer.
3. Turn off the power supply of the host computer.
4. Push the "PUSH" mark on the front lever and open the lever.



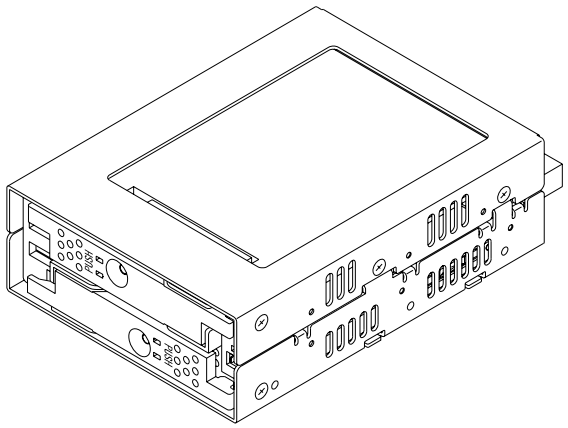
5. Pull the failed drive unit's lever, and then pull out the drive unit.



6. With the replacement unit's drive lever closed, push the replacement drive firmly right into the unit using both hands.



7. Confirm that the front lever is closed.



8. Turn on the power supply of the host computer.
9. Several seconds after replacing the drive unit, data reconstruction will start. The drive status indicator of the replacement drive unit will flash orange (@ 1 second interval).

	Important	Do not remove the drive unit while data reconstruction is underway.

10. During data reconstruction, the drive status indicator of the replacement drive will flash orange, while the drive status indicator of the fully functional drive unit will light green. The access indicator will not light.

11. When data reconstruction is complete, the drive status indicator will go out.

12. If the drive status indicator of the replaced drive unit turns orange once again, repeat the procedure, starting with step 2.

	Important	If you have mistakenly replaced the correctly functioning drive unit, the drive status indicator of both drive units will light green. Then the access indicator will flash orange. The host computer will be unable to operate the **SATA Mirror Drive**. In this case, turn off the host computer. Replace the failed drive unit with the new drive unit, and return the fully functional drive unit. Data reconstruction will immediately start after turning on the host computer.

6.2.2 Replacement of Both Drive Units

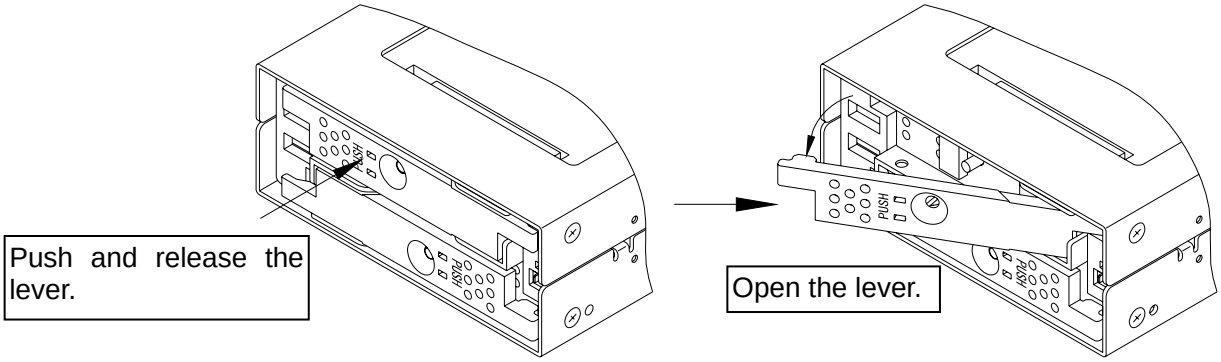
When both drive units seem to have failed, replace the units according to the following procedure.

	Important	This is an emergency recovery procedure; data corruption may or may have already occurred. To avoid further data loss, back up your data in a suitable medium, such as tape or MO drive.

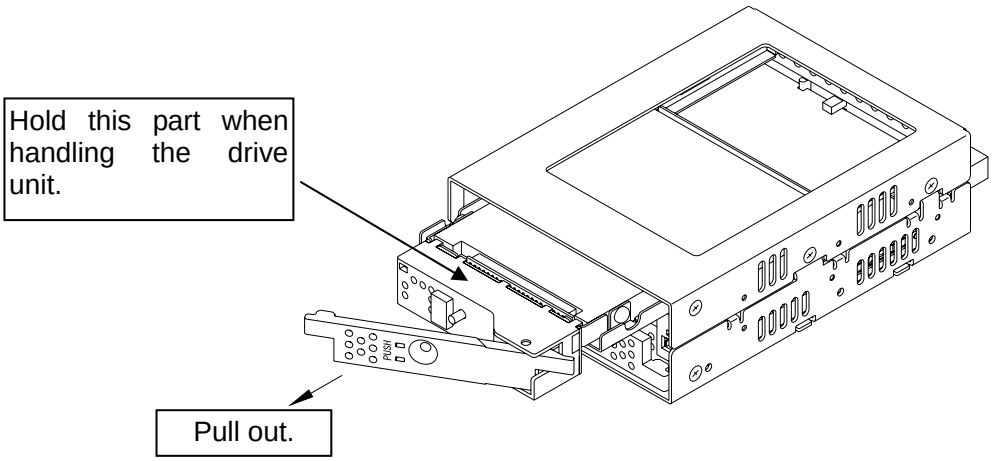
1. Prepare the two new drive units as specified in "Appendix D Replacement Parts."

2. Turn off the power supply of the host computer.

3. The drive unit to be replaced first should be the one that failed first.
   Push the "PUSH" mark on the front lever and open the lever of the drive unit that failed first.



4. Hold the lever of the drive unit that failed first and then pull it out.

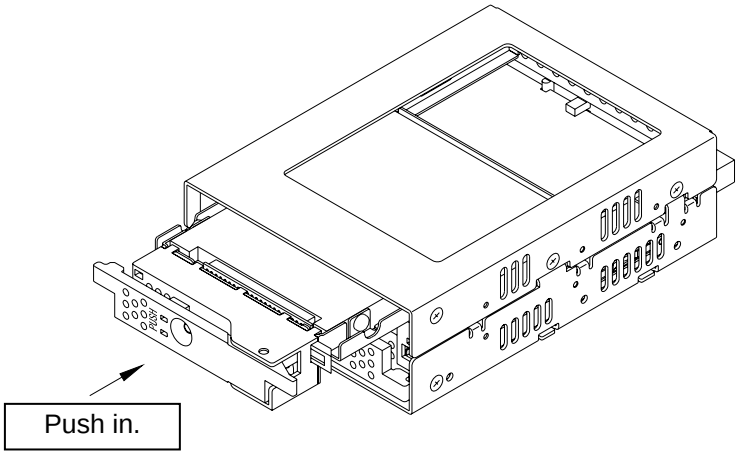


(E.g.) When drive unit 1 failed first.

5. Turn on the power supply of the host computer.

6. Confirm that the host computer recognizes the **SATA Mirror Drive**.

7. After confirming that the host computer recognizes the **SATA Mirror Drive**, insert the replacement drive. With the lever closed, push the replacement drive firmly right into the unit using both hands.



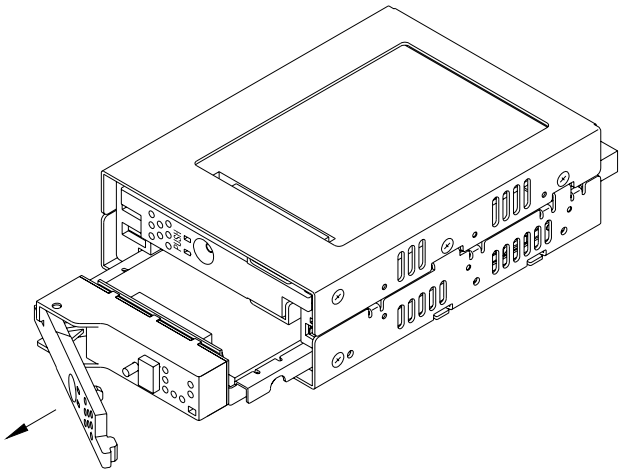
8. Several seconds after replacing the drive unit, data reconstruction will start. The drive status indicator of the replacement drive unit will flash orange (@1 second interval).

	Important	Do not remove the drive unit while data reconstruction is underway.

9. During data reconstruction, the drive status indicator of the replacement drive will flash orange, while the drive status indicator of the other drive unit will light green. The access indicator will not light.

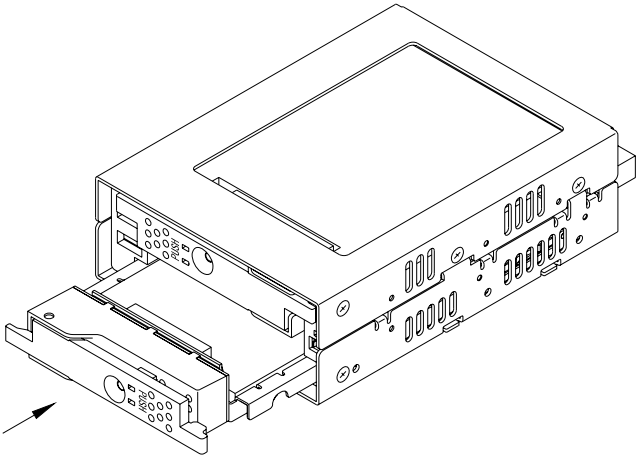
10. When data reconstruction is complete, the drive status indicator will go out.
After confirming that the drive status indicator has gone out, turn off the power supply of the host computer.

11. Hold the lever of the un-replaced drive unit and pull it out.

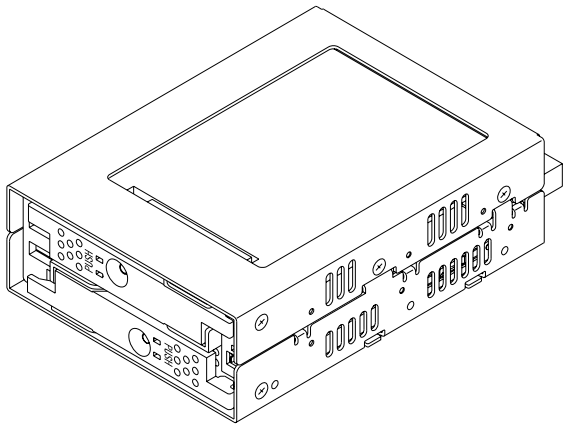


(E.g.) When drive unit 2 failed after drive unit 1.

12. With the replacement unit's drive lever closed, push the drive firmly right into the unit.



13. Confirm that the front lever is locked.



14. Turn on the power supply of the host computer.
15. Several seconds after replacing the drive unit, data reconstruction will start. The drive status indicator of the replacement drive unit will flash orange (@1 second interval).

	Important	Do not remove the drive unit while data reconstruction is underway.

16. During data reconstruction, the drive status indicator of the replacement drive will flash orange, while the drive status indicator of the fully functional drive unit will light green. The access indicator will not light.

17. When data reconstruction is complete, the drive status indicator will go out.

18. If the drive status indicator of the replaced drive unit turns orange once again, repeat the procedure, starting with step 10.

6.3 Replacing Drive Unit

If the access indicator or the drive status indicator lights orange even after drive replacement, the controller may have a problem. In this case, replace the controller unit.
The hot plug function of the **SATA Mirror Drive** cannot be used when replacing the controller unit. Turn off the power supply of the host computer before replacement.
When replacing the controller unit, data can be kept safe by following the correct replacement procedure.
Note that the replacement procedure will differ depending on the drive units' status.

<1> When both drive units are functioning normally:
Switch over both drive units to a new controller unit.
Ensure that each drive unit is inserted into exactly the same drive bays as before.

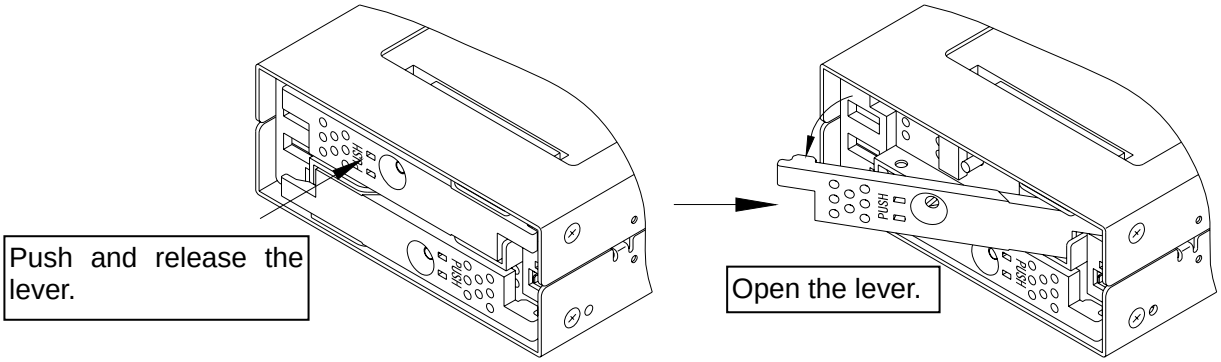
<2> When one drive unit has failed:
When it has been confirmed that one drive unit has failed, ensure that only the correctly functioning drive unit is inserted into the same bay of the new controller.

⚠	Caution	When replacing controller units, make sure to turn off the power of the host computer, and the AC power cable is removed from the socket.
		When replacing drive units, ensure that you touch the chassis or any other grounded parts, to discharge static electricity from your body.
		Do not subject the drive units or the controller to vibration or shock. It may result in malfunction or disk failure.

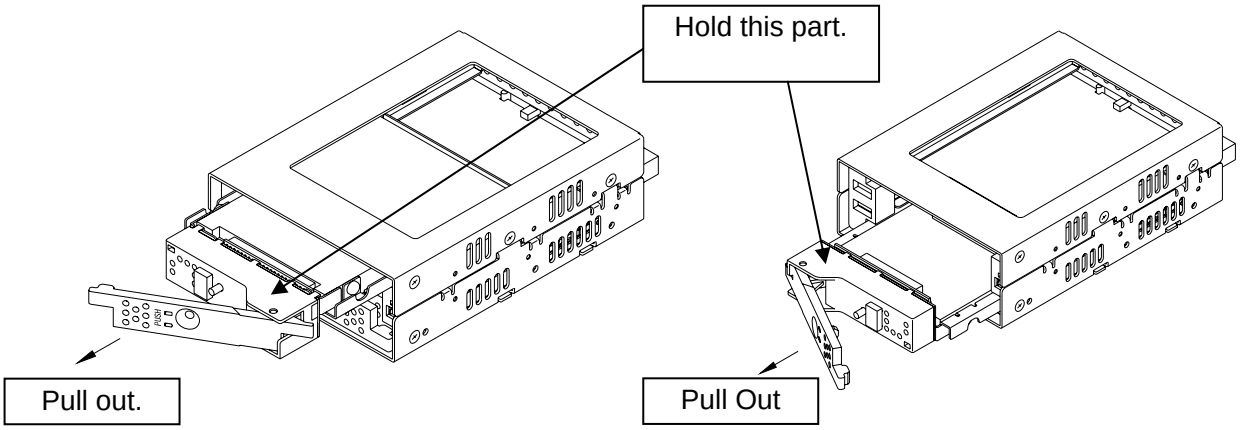
6.3.1 Controller Unit Replacement Procedures (Both Drives Are Good)

●When Both Drive Units Are Functioning Normally

1. Prepare a new controller unit as specified in "Appendix D Replacement Parts."
2. Turn off the power supply of the host computer.
3. Disconnect the SATA Host cable and the SATA internal power cable. Then remove the **SATA Mirror Drive** from the host computer.
4. Push the "PUSH" mark on the front lever and open the lever.

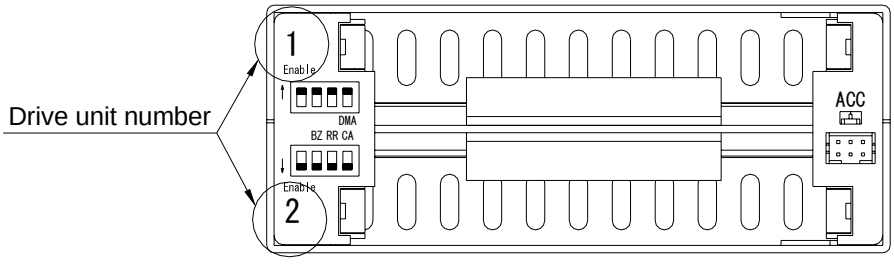


5. Release both drive units' lever one after the other and then pull it out.



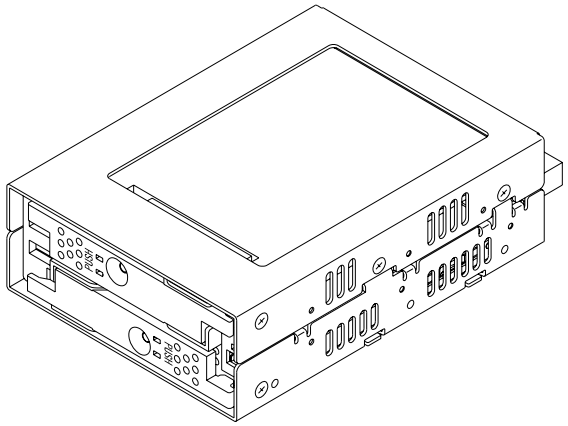
Pull out drive unit 1 Pull out drive unit 2

6. Insert the drive units into the new controller unit. Make sure drive unit numbers 1 and 2 are kept as they were before replacement.
   With the front levers closed, push the drives firmly right into the unit using both hands.



The location of the drive unit number

7. Confirm that the front lever is closed.



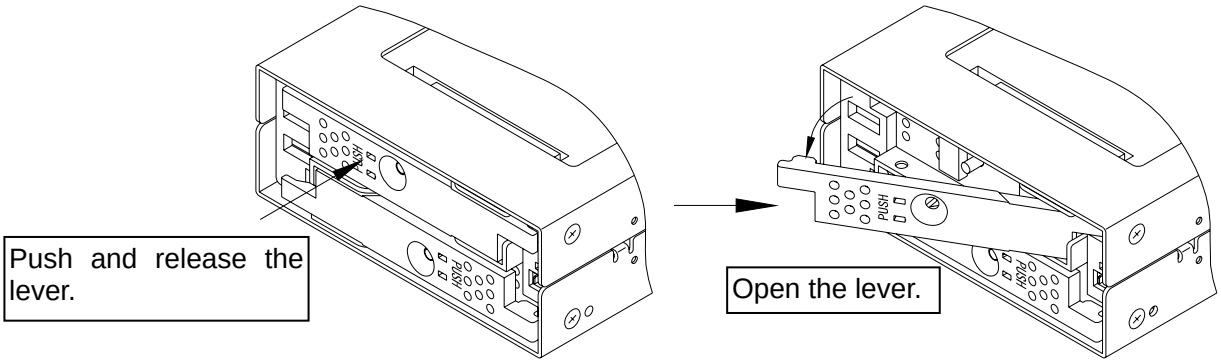
8. Re-install the **SATA Mirror Drive** back into the host computer, connect the SATA Host cable and then finally the SATA power cable.

9. Turn on the power supply of the host computer.

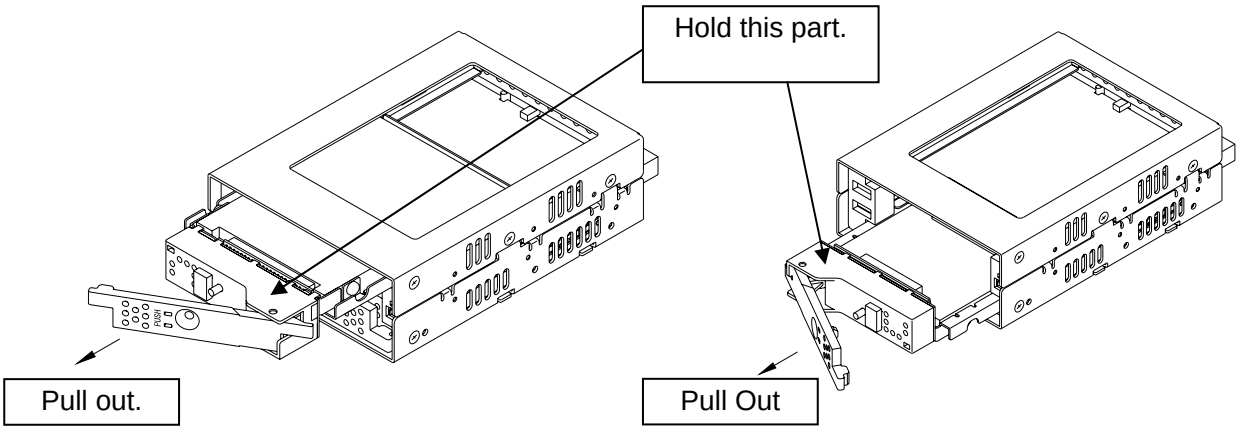
6.3.2 Controller Unit Replacement Procedures (One Drive Unit Has Failed)

●When One Drive Unit Has Failed

1. Prepare a new drive unit and a new controller unit as specified in "Appendix D Replacement Parts."
2. Confirm which drive unit has failed through the drive status indicator or buzzer.
3. Turn off the power supply of the host computer.
4. Disconnect the SATA Host cable and the SATA internal power cable. Then remove the **SATA Mirror Drive** from the host computer.
5. Push the "PUSH" mark on the front lever and open the lever.

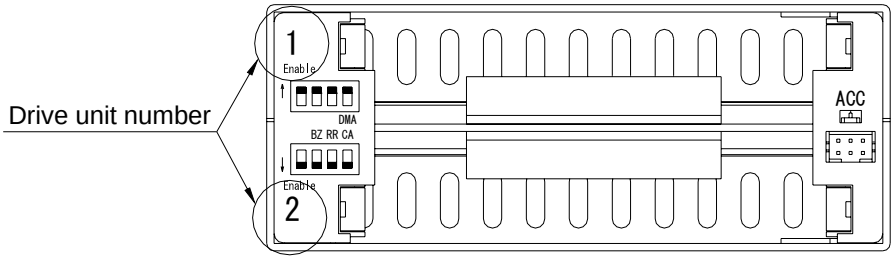


6. Pull out both drive units one after the other.

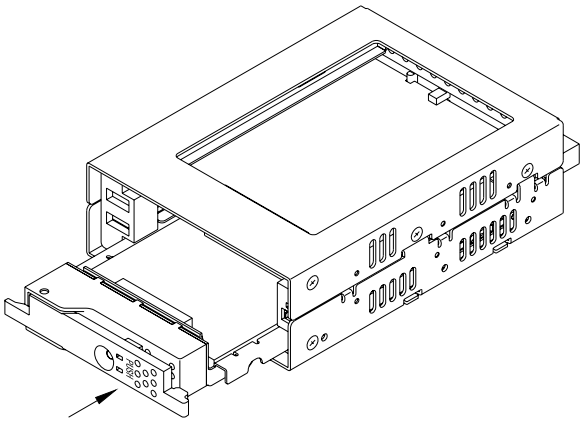


Pull out drive unit 1 Pull out drive unit 2

7. Insert the good drive unit into the new controller unit.
   Please keep the location of the drive unit (number 1 or 2) as it was before.
   With the front lever closed, push the drive firmly right into the unit using both hands.

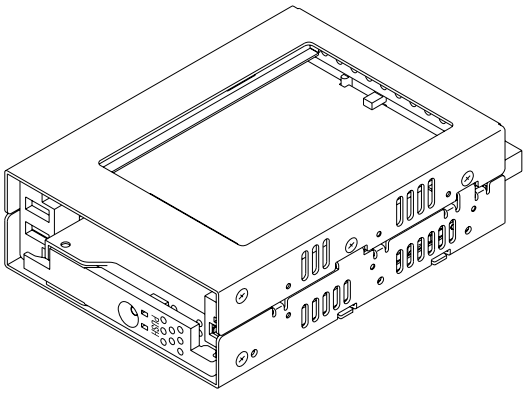


The location of the drive unit number

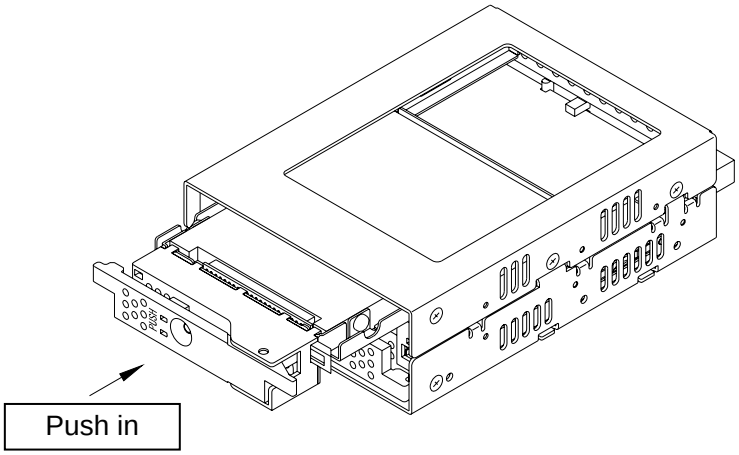


(E.g.) in the case that drive unit 2 works normally

8. Confirm that the front lever is closed.

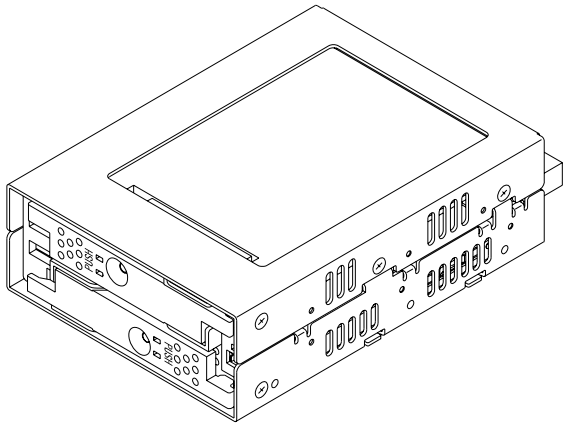


9. Install the **SATA Mirror Drive** into the host computer, connect the SATA Host cable and then finally the SATA power cable.
10. Turn on the power supply of the host computer.
11. Confirm that the host computer recognizes the **SATA Mirror Drive.**
12. Insert the new drive unit into the other empty slot.
    With the front lever closed, push the drive firmly right into the unit using both hands.



(E.g.) When inserting drive unit 1.

13. Confirm that the front levers are closed.



14. Several seconds after replacing the drive unit, data reconstruction will start. The drive status indicator of the replacement drive unit will flash orange (@1 second interval).

	Important	Do not remove the drive unit while data reconstruction is underway.

15. During data reconstruction, the drive status indicator of the replaced drive will flash orange, while the drive status indicator of the fully functional drive unit will light green. The access indicator will not light.

16. When data reconstruction is complete, the drive status indicator will go out.

17. If the drive status indicator of the replaced drive unit turns orange once again (not flashing), turn off the power, pull out the replaced drive unit and repeat the procedure beginning from step 10.

6.4 Other problems

If the problem persists even after you have replaced the drive unit or the controller unit, please contact your distributor.

In addition, if you also happen to encounter other types of problems not mentioned in this manual, please contact your distributor immediately.

Appendix-A Specifications

A.1.1 Product specifications

Model Name		SVRB-U160SA	SVRB-U160SA1
RAID Level		1	
Number of HDDs		2	
Storage Capacity		160GB	
Number of LBAs		312,577,664	
Number of Cylinders		16,383	
Number of Heads		16	
Sectors		63	
Host interface		Serial ATA (SATA) Interface Maximum data transfer rate of 3Gbps	
Data transfer rate（max）		3Gbps	
Dimensions（W x L x H）	SATA Mirror Drive	101.6mm x 145.0 mm x 40.0 mm	
	5-inch Bay Mirror Drive Installation Attachment	146.0mm x 146.0mm x 43.0mm	
Weight（max）	SATA Mirror Drive	700 g	
	5-inch Bay SATA Drive Installation Attachment	900 g	
Voltage（V_{CC}）		4.85 V_{DC} ～ 5.25V_{DC}	
Power supply ripple（max）(*1)		100mV p-p（0～20MHz）	
Power startup time (*2)		5～100ms	
Operating Environments (*3)	Temperature	5 to 45 °C（*Operating*）(*4) -40 to 65 °C（*Non-operating*）	
	Humidity	8 to 90%（*Operating*） 5 to 95%（*Non-operating*）	
	Max. Bulb Temp.	29°C（*Operating*） 40°C（*Non-operating*）	
Power Consumption	Startup（max）	2.5A	2.3A
	Idle（typ.）	1.4A	1.5A
	Read/Write（typ.）	1.8A	1.6A

Note:
(*1): Including startup time.
(*2): Time until V_{CC} reaches 4.85 V_{DC}.
(*3): With no condensation.
(*4): When mounting to the host computer, provide sufficient cooling to keep the surface temperature of the drive unit below 50°C.

Appendix-B Accessories

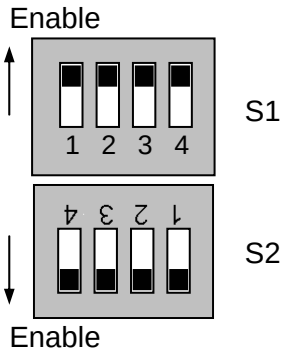
The **SATA Mirror Drive** (SVRB-U Series) is shipped with following accessories.

- Mounting screws. (4pcs.)

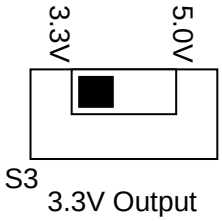
Appendix-C Factory Default Setting

The **SATA Mirror Drive**'s factory default settings are as follows:

● DIP Switch Settings

<table>
<tr><td rowspan="2"></td><td colspan="3">Default Setting
 
</td></tr>
<tr><td>Function / Mode</td><td>SW No.</td><td>DIP SW</td></tr>
<tr><td rowspan="3">Mode</td><td rowspan="3">Mirror Mode</td><td>S1-1</td><td>Enable</td></tr>
<tr><td>S1-2</td><td>Enable</td></tr>
<tr><td>S1-3</td><td>Enable</td></tr>
<tr><td>Reserved</td><td>---</td><td>S1-4</td><td>Enable</td></tr>
<tr><td>Write Cache</td><td>Enable (Write Back)</td><td>S2-1</td><td>Enable</td></tr>
<tr><td>Revival Reconstruction.</td><td>Enable</td><td>S2-2</td><td>Enable</td></tr>
<tr><td>Buzzer</td><td>Enable</td><td>S2-3</td><td>Enable</td></tr>
<tr><td>Reserved</td><td>---</td><td>S2-4</td><td>Enable</td></tr>
</table>

● Status Output Signal Electrical：**3.3V**



Appendix-D Replacement Parts

The following are supplied as user-replaceable parts.

Part name	Part number	
160 GB drive unit	A203958	Replacement drive unit for SVRB-U160SA/SA1
	A204060	
Controller unit	A203959	Replacement controller unit for SVRB-U SATA Mirror Drive Series.

Information

For more information about this product, please contact your distributor.

Distributor's information

● Product Records

Model Name	SVRB-U
Revision	YB-
Serial Number	

● Manufacturer

This product is manufactured by
Storage Vision Co., Ltd. Japan.

http://www.str-v.com/index_e.html